Claims

1. Integrated speaker and antenna element carrier for a communication terminal, **characterised by** a sheet of a flexible film having a conductive first portion (31) forming an antenna element, and an elongated second portion (33) carrying a conductive lead (34) extending from adjacent (36) to said first portion to a speaker connection pad (38) at an outer end (40) of said elongated second portion.

2. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said second portion carries a pair of conductive leads (34,35) from adjacent said first portion to respective speaker connection pads (38,39).

3. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said second portion carries at least one conductive lead which is electrically insulated from said first portion.

4. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said first conductive portion and said lead are shaped by material removal from a conductive layer on the film.

5. The integrated speaker and antenna element carrier as recited in claim 4, **characterised in** that said first conductive portion and said lead are shaped by etching of said conductive layer.

6. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said second portion is devised to carry a speaker (41) connected to said speaker connection pad, wherein said second elongated portion is bendable such that said speaker is positioned at an aperture (32) in said first portion.

7. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said conductive lead extends from a connection pad (36,37)

arranged adjacent to said first portion at a straight edge of said flexible film.

8. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said conductive first portion is a ground plane of an antenna for a radio communication terminal.

9. The integrated speaker and antenna element carrier as recited in claim 1, **characterised in** that said conductive first portion is a an antenna element of an antenna for a radio communication terminal, and has a pattern adapted to provide resonance at predetermined radio frequencies.

10. Combined speaker and antenna arrangement for a communication terminal, comprising a support structure (100) carrying a first antenna element (101), and a second antenna element (31) arranged at a predetermined distance from said first antenna element, **characterised in** that said second antenna element is a conductive first portion of a sheet of flexible film, wherein an elongated second portion (33) of said flexible film, carrying a conductive lead (34), extends from adjacent (36) to said first portion to a speaker (41) connected to an outer end (40) of said elongated second portion.

11. The combined speaker and antenna arrangement as recited in claim 10, **characterised in** that said second elongated portion is bent such that said speaker is positioned between said film and said support structure, adjacent to an aperture (32) in said first portion.

12. The combined speaker and antenna arrangement as recited in claim 10, **characterised in** that said flexible film is attached to said support structure such that said conductive first portion is electrically connected (81,103) to a ground plane of said support structure.

13. The combined speaker and antenna arrangement as recited in claim 12,

characterised in that said flexible film is attached at a side edge (81) thereof, to said support structure, at which second side edge a connector pad (126,127) to said conductive lead is arranged.

14. The combined speaker and antenna arrangement as recited in claim 13, **characterised in** that said connector pad is connected, at said side edge, to speaker control circuitry (120) arranged on said support structure.

15. The combined speaker and antenna arrangement as recited in claim 10, **characterised in** that said flexible film is bar soldered at a straight edge (81) to said support structure, at which straight edge said conductive first portion is electrically connected (103) to a ground plane of said support structure, and a connector pad (104) to said conductive lead is connected to speaker control circuitry (120) arranged on said support structure.

16. The combined speaker and antenna arrangement as recited in any of the previous claims 10 - 15 , **characterised in** that an insulating spacer (61) is arranged intermediate said support structure and said flexible film, defining said predetermined distance between said first and second antenna elements.

17. The combined speaker and antenna arrangement as recited in claim 11 and 16, **characterised in** that said spacer comprises speaker attachment means (63), devised to secure said speaker adjacent to said aperture.

18. The combined speaker and antenna arrangement as recited in claim 16, **characterised in** that said flexible film is attached to said spacer with an adhesive.

19. The combined speaker and antenna arrangement as recited in claim 16, **characterised in** that said spacer is attached to said support structure by cooperating engagement members (66,102).

20. The combined speaker and antenna arrangement as recited in claim 19, **characterised in** that said spacer has a protruding member (66) engaging with a recess (102) in said support structure.

21. The combined speaker and antenna arrangement as recited in any of the previous claims 16 -20, **characterised in** that said support structure is a printed circuit board of a radio communication terminal.

22. Radio communication terminal, comprising a combined speaker and antenna arrangement as recited in any of the previous claims 16 –21.

23. Method for producing an integrated speaker and antenna element carrier for a communication terminal, **characterised by** the steps of:
- providing a flexible film of an insulating material;
- coating said film with a conductive material;
- removing selected portions of the conductive material from the film, to define a first conductive surface portion, and a lead, insulated from said first portion and extending away from adjacent to said first portion; and
- cutting the film such that en elongated second portion thereof, carrying said lead, is shaped.

24. The method as recited in claim 23, **characterised by** said removing of selected portions of the conductive material including the step of etching.

25. The method as recited in claim 23, **characterised by** defining, in said step of removing of selected portions of the conductive material, a pair of separate leads, insulated from said first portion and extending away from adjacent to said first portion.